

Amendments to the Claims:

This Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

1-98 (Cancelled).

99. (New) A method of making a soldering iron tip, comprising:

providing a soldering iron tip core which includes a base portion and a forward extension portion;

masking a working tip end of the extension portion; and

with the working tip end masked, plasma spraying a top coating on the core.

100. (New) The method of claim 99 wherein the plasma spraying includes spinning the core about a longitudinal axis thereof while spraying the top coating on the core.

101. (New) The method of claim 100 wherein the spraying is out a nozzle, and the spraying includes moving the nozzle back and forth along the core as the core is spinning.

102. (New) The method of claim 101 wherein the nozzle during the spraying is about 100 millimeters away from the soldering iron tip and the moving back and forth is for several cycles.

103. (New) The method of claim 101 wherein the temperature in the nozzle is 1,000 to 10,000° C.

104. (New) The method of claim 99 wherein the top coating is an approximately 60 µm layer of SUS316L high-purity stainless steel.

105. (New) The method of claim 99 further comprising before the spraying, roughening the outer surface of the core.

106. (New) The method of claim 105 wherein the roughening includes steel grit blasting the outer surface.

107. (New) The method of claim 106 wherein the roughening includes air blast cleaning the surface after the steel grit blasting.

108. (New) The method of claim 106 wherein the steel grit blasting includes blasting steel grit particles having diameters of between 10 to 250 μm , with an average diameter of 80 μm and a 10 Morse hardness, the output of the blasting is 3.7 to 4.0 kgf/cm², and the blasting is for approximately 10 seconds.

109. (New) The method of claim 99 wherein the masking uses a rubber mask.

110. (New) The method of claim 99 wherein the extension portion is tapered and the working tip end is only a forward portion of the tapered extension portion, approximately 35% of the total length of the tapered extension portion.

111. (New) The method of claim 99 wherein the working tip end includes a metal-injection-molded cap.

112. (New) The method of claim 99 wherein the working tip end includes a plating layer of tin or tin alloy.

113. (New) The method of claim 99 further comprising before the plasma spraying, applying an undercoating to the core.

114. (New) The method of claim 113 wherein the undercoating is applied by plasma spraying.

115. (New) The method of claim 113 wherein the top coating is a ceramic material or a cermet material.

116. (New) The method of claim 113 wherein the undercoating is Ni-20%Cr.

117. (New) The method of claim 113 wherein the undercoating has a heat expansion rate which is greater than that of the top coating and less than that of the material of the core.

118. (New) The method of claim 113 wherein the undercoating is Ni, Co23%, Cr17%, Al 2%, Y0.5%.

119. (New) The method of claim 113 wherein the undercoating is Co, Ni32%, Cr21%, Al 8%, Y0.5%.

120. (New) The method of claim 99 further comprising applying a sealing coating on the top coating.
121. (New) The method of claim 120 wherein the sealing coating is Cr₂O₃, SiO₂ or ZrO₂.
122. (New) The method of claim 120 wherein the sealing coating is applied by brushing or by dipping.
123. (New) The method of claim 120 further comprising hardening the sealing coating by heating after the applying.
124. (New) The method of claim 123 wherein the heating is for approximately 30 minutes at approximately 180° C.
125. (New) The method of claim 99 wherein the top coating is Mo.
126. (New) The method of claim 99 wherein the top coating is Al, Ni, Cu, W, or Ti.
127. (New) The method of claim 99 wherein the top coating is Ti.
128. (New) The method of claim 99 wherein the top coating is a ceramic material or a cermet material.
129. (New) The method of claim 99 further comprising after the plasma spraying, removing the mask.
130. (New) The method of claim 129 wherein after the removing, the working tip end has a wettability by solder and the rest of the extension portion does not have a wettability by solder.
131. (New) The method of claim 99 wherein the core is copper or a copper alloy.
132. (New) The method of claim 99 wherein the soldering iron tip is for a desoldering tool and the core has a longitudinal suction through-passageway.
133. (New) A soldering iron tip manufactured by the method of claim 99.

134. (New) The soldering iron tip of claim 133 wherein the soldering iron tip comprises a desoldering tool nozzle.

135. (New) A method of forming a soldering iron tip, comprising:

providing a soldering iron tip core having a base portion and a forward extension portion;
masking a working tip end of the extension portion;
with the working tip end masked, applying an undercoating on the core;
with the working tip end masked, spraying a ceramic, cermet or metal top coating on the undercoating; and
applying a sealant on the top coating.

136. (New) The method of claim 135 wherein the applying the sealant is with the working tip end masked.

137. (New) A soldering iron tip formed by the method of claim 135.

138. (New) A soldering iron tip, comprising:

a heat-conducting core having a base portion and a forward extension portion; and
a top coating on the base portion and on the extension portion but not on a working tip end thereof, the top coating not being wettable by solder.

139. (New) The soldering iron tip of claim 138 wherein the working tip end is a tin or tin alloy coated working tip end having a wettability by solder.

140. (New) The soldering iron tip of claim 138 wherein the top coating is an approximately 60 μm layer of SUS316L high-purity stainless steel.

141. (New) The soldering iron tip of claim 138 wherein the extension portion is conical.

142. (New) The soldering iron tip of claim 138 wherein the core comprises copper or copper alloy.

143. (New) The soldering iron tip of claim 138 wherein the working tip end includes a plating layer of tin or tin alloy.

144. (New) The soldering iron tip of claim 138 further comprising an undercoating on the core underneath the top coating.

145. (New) The soldering iron tip of claim 144 wherein the undercoating has a thickness of approximately 30 μm .

146. (New) The soldering iron tip of claim 144 wherein the top coating is a ceramic material, a cermet material, or a metal.

147. (New) The soldering iron tip of claim 144 wherein the undercoating is Ni-20%Cr.

148. (New) The soldering iron tip of claim 144 wherein the undercoating has a heat expansion rate that is greater than that of the top coating and less than that of the material of the core.

149. (New) The soldering iron tip of claim 144 wherein the undercoating is Ni, Co23%, Cr17%, Al 2%, Y0.5%.

150. (New) The soldering iron tip of claim 144 wherein the undercoating is Co, Ni32%, Cr21%, Al 8%, Y0.5%.

151. (New) The soldering iron tip of claim 138 further comprising a sealing coating on the top coating.

152. (New) The soldering iron tip of claim 151 wherein the sealing coating is Cr_2O_3 , SiO_2 or ZrO_2 .

153. (New) The soldering iron tip of claim 151 wherein the sealing coating has a thickness of between 1 and 100 μm .

154. (New) The soldering iron tip of claim 151 wherein the sealing coating is a heat-hardened sealing coating.

155. (New) The soldering iron tip of claim 138 wherein the top coating is Mo.

156. (New) The soldering iron tip of claim 138 wherein the top coating is Al, Ni, Cu, W, or Ti.

157. (New) The soldering iron tip of claim 138 wherein the top coating is Ti.
158. (New) The soldering iron tip of claim 138 wherein the core has a rearwardly-opening cavity adapted to receive a bar-shaped heater therein.
159. (New) The soldering iron tip of claim 158 further comprising an aluminum oxide film in the cavity.
160. (New) The soldering iron tip of claim 158 further comprising an Ag-Al-Cu alloy coating layer in the cavity.
161. (New) The soldering iron tip of claim 138 wherein the forward extension portion includes a solder tip cap brazed to a forward tip portion of the core with a silver particle layer sandwiched therebetween.
162. (New) The soldering iron tip of claim 161 wherein the solder tip cap is an iron cap.
163. (New) The soldering iron tip of claim 161 wherein the solder tip cap is a metal-injection-molded cap.
164. (New) The soldering iron tip of claim 138 wherein the soldering iron tip is for a desoldering tool and the core has a longitudinal suction through-passageway.
165. (New) The soldering iron tip of claim 138 including a metal-injection-molded cap at the working tip end.
166. (New) The soldering iron tip of claim 165 wherein the cap is brazed to the core with a silver particle paste sandwiched between the cap and the forward extension portion.
167. (New) The soldering iron tip of claim 138 wherein the forward extension portion has a total length of between 0.5 and 2.5 cm and the working tip end has a length of between 0.1 and 1 cm.
168. (New) The soldering iron tip of claim 138 wherein the forward extension portion has a total length of approximately 1.7 cm and the working tip end has a length of approximately 0.6 cm.

169. (New) The soldering iron tip of claim 138 further comprising an undercoating underneath the top coating and a sealant on the top coating.

170. (New) The soldering iron tip of claim 169 wherein the sealant has a thickness of approximately 50 μm , the top coating has a thickness of approximately 60 μm and the undercoating has a thickness of approximately 30 μm .

171. (New) The soldering iron tip of claim 164 wherein the top coating comprises ceramic, cermet or metal.